COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
***DRAFT* PERMIT**
TO WITHDRAW GROUNDWATER IN THE
EASTERN VIRGINIA GROUNDWATER MANAGEMENT AREA

Permit Number: GW0080600
Effective Date: Xxxxxxx XX, 2023
Expiration Date: Xxxxxxx XX, 2038

Pursuant to the Ground Water Management Act of 1992 (Section 62.1-254 et seq. of the Code of Virginia) and the Groundwater Withdrawal Regulations (Regulations) (9VAC25-610), the Department of Environmental Quality hereby authorizes the Permittee to withdraw and use groundwater in accordance with this permit.

Permittee: PRTI, Inc.

Facility: PRTI VA-1, LLC

Facility Address: Enviva Way

Southampton County, VA 23851

The Permittee's authorized groundwater withdrawal shall not exceed:

8,700,000 gallons per year,
1,100,000 gallons per month,

The permitted withdrawal will be used for steam generation, equipment maintenance and washing, and other processes associated with the recycling of waste tires. Other uses are not authorized by this permit.

The Permittee shall comply with all conditions and requirements of the permit.

By direction of the Department of Environmental Quality, this Permit is granted by:

Signed _____ Date _____

Scott Morris, DBA, P.E.
Director, Water Division

This permit is based on the Permittee's application submitted on December 21, 2022, and subsequently amended to include supplemental information provided by the Permittee. The following are conditions that govern the system set-up and operation, monitoring, reporting, and recordkeeping pertinent to the Regulations.

Part I
Operating Conditions

A. Authorized Withdrawal

1. The withdrawal of groundwater shall be limited to the following wells identified in the table below. Withdrawals from wells not included in Table 1 are not authorized by this permit and are therefore prohibited. 9VAC25-610-140 A

Table 1

Owner Well Name	DEQ Well #	Well Depth (ft bls)	Screen Intervals	Aquifer	Latitude	Longitude	Datum
Well #1	187-00276	405	355 – 405	Potomac	36° 39' 13.1361"	-76° 58' 30.5470"	NAD83
Well #2	187-00277	410	360 – 410	Potomac	36° 39' 12.62474"	-76° 58' 30.18436"	NAD83

2. Any actions that result in a change to the status, construction, or pump intake setting of wells included in this permit must be pre-approved by the Department of Environmental Quality (Department or DEQ) in writing prior to implementing the change and a revised GW-2 Form must be submitted to the Department within 30 days after the physical construction of a well is altered or the pump intake setting has been changed. If changes are a result of an emergency, notify the Department within 5 days from the change. 9VAC25-610-140 C

B. Pump Intake Settings

1. The Permittee shall not place a pump or water intake device lower than the top of the uppermost confined aquifer that a well utilizes as a groundwater source or lower than the bottom of an unconfined aquifer that a well utilizes as a groundwater source in order to prevent dewatering of the aquifer, loss of inelastic storage, or damage to the aquifer from compaction. 9VAC25-610-140 A 6

2. Pump settings in individual wells are limited as follows. Any change in the pump setting must receive prior approval by the Department.

Owner Well Name	DEQ Well #	Max Pump Setting (feet below land surface)
Well #1	187-00276	260
Well #2	187-00277	250

C. Reporting

1. Water withdrawn from each well shall be recorded monthly at the end of each month and reported to

the Department, in paper or electronic format, on a form provided by the Department by the tenth (10^{th}) day of each January, April, July and October for the respective previous calendar quarter. Records of water use shall be maintained by the Permittee in accordance with Part III.F, 1 through 5 of this permit. 9VAC25-610-140 A 9

2. The Permittee shall report any amount in excess of the permitted withdrawal limit by the fifth (5th) day of the month following the month when such a withdrawal occurred. Failure to report may result in compliance or enforcement activities. 9VAC25-610-140 C

3. The following is a summary of reporting requirements for specific facility wells:

Owner Well Name	DEQ Well #	Reporting Requirements
Well #1	187-00276	Water Use
Well #2	187-00277	Water Use

D. Water Conservation and Management Plan

1. The Water Conservation and Management Plan (WCMP) submitted in the application received December 21, 2022 and subsequently amended and then approved by the Department is incorporated by reference into this permit and shall have the same effect as any condition contained in this permit and may be enforced as such.

2. By the end of the first year of the permit cycle [*date*] the Permittee shall submit documentation to the Department that the leak detection and repair program defined in the WCMP has been initiated. This documentation shall include activities completed during the first year of the permit term. 9VAC25-610-100 B

3. As soon as completed but not later than the end of the second year of the permit cycle [*date*] the Permittee shall submit to the Department results of an audit of the total amount of groundwater used in the distribution system and operational processes. This documentation shall include any resulting changes to the leak detection and repair program in the WCMP. 9VAC25-610-100 B

4. A report on the plan's effectiveness in reducing water use, including revisions to those elements of the WCMP that can be improved and addition of other elements found to be effective based on operations to date shall be submitted by the end of years five [*date*] and ten [*date*] of the permit term. These reports shall include as appropriate: 9VAC25-610-140 C

    a. Any new water saving equipment installed or water saving processes adopted;

    b. WCMP actions taken to reduce the volume of water needed to supply the system;

    c. Planned short or long term efforts and actions to be added to the WCMP to improve the efficiency of water use in the system or by customers and for reducing the loss of water;

    d. Results of additional water audits completed;

    e. Review of water use category (residential, commercial, industrial) per-connection use in municipal systems;

f. Evaluation of the leak detection and repair program;

g. Description of educational activities completed; and

h. Identification of any water reuse opportunities identified.

5. If revisions or additions to the plan are necessary, an updated WCMP shall be submitted to the Department for approval along with the report prior to implementation of the revised plan.

6. Records of activities conducted pursuant to the WCMP are to be submitted to the Department upon request.

E. Well Tags

1. Each well that is included in this permit shall have affixed to the well casing, in a prominent place, a permanent well identification plate that records, at a minimum, the Department well identification number, the groundwater withdrawal permit number, the total depth of the well, and the screened intervals in the well. Such well identification plates shall be in a format specified by the Department and are available from the Department. 9VAC25-610-140 A 12

2. Well tags shall be affixed to the appropriate well casing within 30 days of receiving the tags from the Department. The accompanying well tag installation certification form shall be returned to the Department within 60 days of receipt of the tags. 9VAC25-610-140 C

Part II
Special Conditions

Pursuant to 9VAC25-610-140 B and C, the following Special Conditions apply to this permit in order to protect the public welfare, safety, and health or conserve, protect and help ensure the beneficial use of groundwater.

A. Pump Intake Determination

Prior to use of the two production wells, the Permittee shall ensure the pump intake for each well is at or above the stated maximum pump setting as provided in feet below land surface (ft bls). The Permittee shall advise the Department, in writing, of the pump settings within 30 days of the determination.

Well Name	DEQ Well #	Maximum Pump Setting (ft bls)
Well #1	187-00276	260
Well #2	187-00277	250

Part III
General Conditions

A. Duty to Comply

The Permittee shall comply with all conditions of the permit. Nothing in this permit shall be construed to relieve the permit holder of the duty to comply with all applicable federal and state statutes, regulations and prohibitions. Any permit violation is a violation of the law and is grounds for enforcement action, permit termination, revocation, modification, or denial of a permit application. 9VAC25-610-130 A

B. Duty to Cease or Confine Activity

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the activity for which a permit has been granted in order to maintain compliance with the conditions of the permit. 9VAC25-610-130 B

C. Duty to Mitigate

The Permittee shall take all reasonable steps to avoid all adverse impacts that may result from this withdrawal as defined in 9VAC25-610-10 and provide mitigation of the adverse impact when necessary as described in 9VAC25-610-110 D 3 g and 9VAC25-610-130 C.

D. Inspection, Entry, and Information Requests

Upon presentation of credentials, the Permittee shall allow the Department, or any duly authorized agent of the Department, at reasonable times and under reasonable circumstances, to enter upon the Permittee's property, public or private, and have access to, inspect and copy any records that must be kept as part of the permit conditions, and to inspect any facilities, well(s), water supply system, operations, or practices (including sampling, monitoring and withdrawal) regulated or required under the permit. For the purpose of this section, the time for inspection shall be deemed reasonable during regular business hours. Nothing contained herein shall make an inspection time unreasonable during an emergency. 9VAC25-610-130 D

E. Duty to Provide Information

The Permittee shall furnish to the Department, within a reasonable time, any information that the Department may request to determine whether cause exists for modifying or revoking, reissuing, or terminating the permit, or to determine compliance with the permit. The Permittee shall also furnish to the Department, upon request, copies of records required to be kept by regulation or this permit. 9VAC25-610-130 E

F. Monitoring and Records Requirements

1. The Permittee shall maintain a copy of the permit on-site and/or shall make the permit available upon request. 9VAC25-610-130 E

2. Monitoring of parameters shall be conducted according to approved analytical methods as specified in the permit. 9VAC25-610-130 F 1

3. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. 9VAC25-610-130 F 2

4. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart or electronic recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three years from the date of the expiration of a granted permit. This period may be extended by request of the Department at any time. 9VAC25-610-130 F 3

5. Records of monitoring information shall include as appropriate: 9VAC25-610-130 F 4

    a. the date, exact place and time of sampling or measurements;

    b. the name(s) of the individual(s) who performed the sampling or measurements;

    c. the date the analyses were performed;

    d. the name(s) of the individual(s) who performed the analyses;

    e. the analytical techniques or methods supporting the information, such as observations, readings, calculations and bench data used;

    f. the results of such analyses; and

    g. chain of custody documentation.

G. Environmental Laboratory Certification

The Permittee shall comply with the requirement for certification of laboratories conducting any tests, analyses, measurements, or monitoring required pursuant to the State Water Control Law (§ 62.1-44.2 et seq. of the Code of Virginia), Environmental Laboratory Certification Program (§ 2.2-1105 et seq. of the Code of Virginia), Certification for Noncommercial Environmental Laboratories (1VAC30-45), and/or Accreditation for Commercial Environmental Laboratories (1VAC30-46), and

1. Ensure that all samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. Conduct monitoring according to procedures approved under 40CFR Part 136 or alternative methods approved by the U.S. Environmental Protection Agency.

3. Periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals that will ensure accuracy of measurements. 1VAC30-45-20

H. Future Permitting Actions

1. A permit may be modified or revoked as set forth in Part VI of the Groundwater Withdrawal Regulations. 9VAC25-610-290 and 9VAC25-610-130 G

2. If a Permittee files a request for permit modification or revocation, or files a notification of planned changes, or anticipated noncompliance, the permit terms and conditions shall remain effective until the Department makes a final case decision. This provision shall not be used to extend the expiration date of the effective permit. 9VAC25-610-130 G

3. Permits may be modified or revoked upon the request of the Permittee, or upon Department initiative, to reflect the requirements of any changes in the statutes or regulations. 9VAC25-610-130 G

4. The Permittee shall schedule a meeting with the Department prior to submitting a new, expanded or modified permit application. 9VAC25-610-85

5. A new permit application shall be submitted 270 days prior to the expiration date of this permit, unless permission for a later date has been granted by the Department, to continue a withdrawal greater than or equal to 300,000 gallons in any month while an application for a renewal is being processed. 9VAC25-610-96

6. A new permit application shall be submitted 270 days prior to any proposed modification to this permit that will (i) result in an increase of withdrawal above permitted limits; or (ii) violate the terms and conditions of this permit. 9VAC25-610-96

7. The applicant shall provide all information described in 9VAC25-610-94 for any reapplication. 9VAC25-610-96 C

8. The Permittee must notify the Department in writing of any changes to owner and facility contact information within 30 days of the change. 9VAC25-610-140 C

I. Metering and Equipment Requirements

1. Each well and/or impoundment or impoundment system shall have an in-line totalizing flow meter to read gallons, cubic feet, or cubic meters installed prior to beginning the permitted use. Meters shall produce volume determinations within plus or minus 10% of actual flows. An alternative method for determining flow may be approved by the Department on a case-by-case basis. 9VAC25-610-140 A 7 b

    a. A defective meter or other device must be repaired or replaced within 30 days.

    b. A defective meter is not grounds for not reporting withdrawals. During any period when a meter is defective, generally accepted engineering methods shall be used to estimate withdrawals. The period during which the meter was defective must be clearly identified in the groundwater withdrawal report required by Part I, Subsection D of this permit.

2. Each well shall be equipped in a manner such that water levels can be measured during pumping and non-pumping periods without dismantling any equipment. Any opening for tape measurement of water levels shall have an inside diameter of at least 0.5 inches and be sealed by a removable plug or cap. The Permittee shall provide a tap for taking raw water samples from each permitted well. 9VAC25-610-140 A 7 e

J. Minor Modifications

1. A minor modification to this permit must be made to replace an existing well(s) or add an additional well(s) provided that the well(s) is screened in the same aquifer(s) as the existing well(s), and is in the near vicinity of the existing well(s), the total groundwater withdrawal does not increase, the area of impact does not increase, and the well has been approved by the Department prior to construction. 9VAC25-610-330 B 4 and B 5

2. A minor modification to this permit must be made to combine withdrawals governed by multiple permits when the systems are physically connected as long as interconnection will not result in additional groundwater withdrawal and the area of impact will not increase. 9VAC25-610-330 B 6

3. Minor modifications to this permit must also be made to:

    a. Change an interim compliance date up to 120 days from the original compliance date, as long as the change does not interfere with the final compliance date. 9VAC25-610-330 B 7

    b. Allow for change in ownership when the Department determines no other change in the permit is necessary and the appropriate written agreements are provided in accordance with the transferability of permits and special exceptions. 9VAC25-610-320 and 9VAC25-610-330 B 8

    c. Revise a Water Conservation and Management Plan to update conservation measures being implemented by the Permittee that increase the amount of groundwater conserved. 9VAC25-610-330 B 9

K. Well Construction

At least two weeks prior to the scheduled construction of any well(s), the Permittee shall notify the Department of the construction timetable and receive prior approval of the well(s) location(s) and acquire the Department Well number (DEQ Well #). All wells shall be constructed in accordance with the following requirements.

1. A well site approval letter or well construction permit must be obtained from the Virginia Department of Health prior to construction of the well. 9VAC25-610-130 A

2. A complete suite of geophysical logs (16"/64" Normal, Single Point, Self-Potential, Lateral, and Natural Gamma) shall be completed for the well and submitted to the Department along with the corresponding completion report. 9VAC25-610-140 C

3. The Permittee shall evaluate the geophysical log and driller’s log information to estimate the top of the target aquifer and; therefore, a depth below which the pump shall not be set. The Permittee's

determination of the top of the target aquifer shall be submitted to the Department for review and approval, or approved on site by the Department's Groundwater Characterization staff, prior to installation of any pump. 9VAC25-610-140 A 6

4. The Permittee shall install gravel packs and grout in a manner that prevents leakance between aquifers. Gravel pack shall be terminated close to the top of the well screen(s) and shall not extend above the top of the target aquifer. 9VAC25-610-140 C

5. A completed GW-2 Form and any additional water well construction documents shall be submitted to the Department within 30 days of the completion of any well and prior to the initiation of any withdrawal from the well. The assigned Department Well number shall be included on all well documents. 9VAC25-610-140 C

6. In addition to the above requirements, if required by the permit, construction of a Water Level Monitoring State Observation Well (SOW) requires:

    a. The Permittee shall coordinate activities with the Department's Groundwater Characterization Program (GWCP) to determine the appropriate observation well location and construction schedule, along with the needed screen interval(s), and other completion details following review of geophysical logging. 9VAC25-610-140 C

    b. Prior to preparation of bid documents for construction of the observation well, the Permittee shall notify the Department and shall include any GWCP requirements in the bid documents. At a minimum, the Department will require a pre-bid meeting with interested drilling contractors and a pre-construction meeting with the successful bidder. 9VAC25-610-140 C

    c. Instrumentation to meet the requirements for real-time data transmission consistent with the State Observation Well Network shall be purchased by the Permittee. The Permittee shall submit a purchase order based on the Department's equipment specifications for review and approval prior to purchase of the equipment. The Permittee shall install the real-time equipment infrastructure with Department oversight. The Department will conduct the installation of the transducer and final hook-up of the equipment. 9VAC25-610-140 C

7. In addition to the above requirements, if required by the permit, construction of a Chloride Monitoring SOW requires:

    a. The Permittee shall coordinate activities with the Department's Groundwater Characterization Program (GWCP) to determine the appropriate observation well location and construction schedule, along with the needed screen interval(s), and other completion details following review of geophysical logging. 9VAC25-610-140 C

    b. Prior to preparation of bid documents for construction of the observation well, the Permittee shall notify the Department and shall include any GWCP requirements in the bid documents. At a minimum, the Department will require a pre-bid meeting with interested drilling contractors and a pre-construction meeting with the successful bidder. 9VAC25-610-140 C

    c. Instrumentation to meet the requirements for real-time data transmission consistent with the State Observation Well Network shall be purchased by the Permittee. The Permittee shall

submit a purchase order based on the Department's equipment specifications for review and approval prior to purchase of the equipment. The Permittee shall install the real-time equipment infrastructure with Department oversight. The Department will conduct final hook-up of the equipment. 9VAC25-610-140 C

d. Instrumentation to meet the requirements for continuous measurement of specific conductance from multiple levels within the well screen shall be purchased by the Permittee. The Permittee shall submit a purchase order based on the Department's equipment specifications for review and approval prior to purchase of the equipment. The Permittee shall install the real-time equipment infrastructure with Department oversight. The Department will conduct the final hook-up of the equipment. 9VAC25-610-140 C

L. Permit Reopening

This permit may be reopened for the purpose of modifying the conditions of the permit as follows:

1. To meet new regulatory standards duly adopted by the Board. 9VAC25-610-140 A 11

2. When new information becomes available about the permitted withdrawal, or the impact of the withdrawal, which had not been available at permit issuance and would have justified the application of different conditions at the time of issuance. 9VAC25-610-310 B 1

3. When the reported withdrawal is less than 60% of the permitted withdrawal amount for a five year period. 9VAC25-610-310 B 2

4. If monitoring information indicates the potential for adverse impacts to groundwater quality or level due to this withdrawal. 9VAC25-610-140 C

COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

PERMIT ISSUANCE FACT SHEET

Groundwater Withdrawal Permit Number: GW0080600
Application Date: December 21, 2022

The Department of Environmental Quality (Department or DEQ) has reviewed the application for a Groundwater Withdrawal Permit. This document provides the pertinent information concerning the legal basis, scientific rationale, and justification for the issuance/reissuance/modification of the Groundwater Withdrawal Permit listed below. Based on the information provided in the application and subsequent revisions, the Department has determined that there is a reasonable assurance that the activity authorized by the permit is a beneficial use as defined by the regulations. Groundwater impacts have been minimized to the maximum extent practicable. The following details the application review process and summarizes relevant information for developing the Permit and applicable conditions.

Permittee / Legal Responsible Party

Name & Address: PRTI, Inc.
2105 US 1 HWY,
Franklinton, NC 27525
Phone: (919) 673-2399

Facility Name and Address

Name & Address: PRTI VA-1, LLC
Enviva Way
Southampton County, VA 23851
Phone: (919) 673-2399

Contact Information:

Name: Brent Burger
E-mail: bburger@prtitech.com
Phone: (919) 673-2399

Proposed Beneficial Use: Groundwater will be used for steam generation, equipment maintenance and washing, and other processes associated with the recycling of the waste tires.

Staff Findings and Recommendations

Based on review of the permit application, staff provides the following findings.

- The proposed activity is consistent with the provisions of the Ground Water Management Act of 1992, and will protect other beneficial uses.
- The proposed permit addresses minimization of the amount of groundwater needed to provide the intended beneficial use.
- The effect of the impact will not cause or contribute to significant impairment of state waters.
- This permit includes a plan to mitigate adverse impacts on existing groundwater users.

Staff recommends Groundwater Withdrawal Permit Number GW0080600 be issued as proposed.

Approved: _____
Scott Morris, DBA, P.E.
Director, Water Division

Date: _____

Processing Dates

Processing Action	Date Occurred/Received
Pre-Application Meeting:	May 19, 2022
Application Received by DEQ:	December 21, 2022
Permit Fee Deposited by Accounting:	December 20, 2022
Application Review Conducted:	March 10, 2023
Notice of Deficiency Sent	NA
Local Government Ordinance Form Received by DEQ:	December 21, 2022
Application Complete:	March 10, 2023
Submit Request for Technical Evaluation:	March 17, 2023
Technical Evaluation Received by DEQ:	March 28, 2023
Draft Permit Package Sent:	May 1, 2023
Public Notice Published:	
End of 30-Day Public Comment Period:	
Response to Public comment:	
Public Meeting or Hearing:	

Application

Application Information

Description:

Background / Purpose of Facility:
The PRTI VA-1, LLC facility will be new construction on a 20.12-acre vacant lot of a waste tire recycling facility. The patented process (Thermal Demanufacturing®) will recycle waste tires by transforming them into sources of energy for electricity generation and steel. The facility has two production wells which are both screened in the Potomac Aquifer. Groundwater will be used for steam generation, equipment maintenance and washing, and other processes associated with the recycling of the waste tires.

Location of Facility/Withdrawal:

Water Supply Planning Unit: Hampton Roads PDC

County: Southampton

GWMA/Aquifer: Eastern Virginia GWMA/Potomac aquifer

Conjunctive Use Source: No conjunctive use.

Withdrawal Use, Current Need, and Projected Demand:

Basis of Need:
Groundwater will be used for steam generation, equipment maintenance and washing, and other processes associated with the recycling of the waste tires. Water for employee consumption and hygiene will be provided by Southampton County's public water system.

Water Demand and Projections:
The main water use for Thermal Demanufacturing® will be for quenching which will generate steam, some of which can be condensed and collected for reuse. The average water demand in this process is 7,554 gallons per day (gpd), or 2,759,245 gallons per year (gal/yr). Approximately 55% is recyclable which equates to an average of 1,247,110 gal/yr of demand from groundwater.

Solid fuel extracted through Thermal Demanufacturing® will be used to generate electricity using boilers and steam turbines. The average steam production rate will be 99,759 gallons per day. Approximately 80% of this steam will be recycled and 20% will be removed from the system through the boiler blowdown process which must be replaced. Replacing the boiler blowdown water will require an average of 19,950 gpd of groundwater, or 7,286,738 gal/yr.

The total average water demand for industrial cleaning and maintenance will be 1,875 gpd, or 677,174 gal/yr. Approximately 77% of this demand is recyclable which equates to an average of 155,962 gal/yr of demand from groundwater.

Summing the Potomac aquifer demand of these main processes equal an average demand of 8,689,809 gal/yr. Rounding up to the nearest 100,000 gallons equates to an annual demand of 8,700,000 gallons of groundwater.

Based on fluctuations due to waste tire contracts, tire delivery schedules, and facility maintenance a requested monthly withdrawal limit of 1,100,000 gallons has been requested, which is equivalent to approximately 13% of the requested annual withdrawal limit.

Withdrawal Volumes Requested:
The applicant requested the following withdrawal volumes based upon the projected groundwater demand.

Period of Withdrawal	Total Volume (gal.)	Volume in gal/day
Maximum Monthly:	1,100,000	35,484
Maximum Annual:	8,700,000	23,836

Department Evaluation

Historic Withdrawals:
This facility has not yet been constructed. Therefore, historical withdrawal information is not available.

Analysis of Alternative Water Supplies:
The Columbia (Surficial) and Yorktown-Eastover aquifers are not likely to be viable options for groundwater use at the facility due to their thinness and presence of materials with low hydraulic conductivity. Both the Aquia and Virginia Beach aquifers have limited transmissivity due to their

thinness. This combined with the current Virginia Coastal Plain Model (VCPM) simulated heads in the vicinity of the facility make these aquifers infeasible sources of groundwater for the facility.
The nearest surface water body that could have enough flow to support the facility's water demand is the Nottoway River which is approximately 1.6 miles west of the facility. This is not a viable source due to the financial and practical implications of constructing a pipeline this distance crossing numerous property boundaries, as well as extensive treatment that would be required to make the water quality suitable for the facility's processes.

The only existing public water system to which this facility could feasibly be connected is the one owned and operated by Southampton County (the County). The County's wells withdraw water from the Virginia Beach aquifer which has VCPM-simulated critical heads in the region.

On average, approximately 78% of water is expected to be filtered and recycled on-site. However, PRTI will continue to evaluate the potential for greywater reuse and stormwater capture.

Public Water Supply:
Water for employee consumption and hygiene will be provided by Southampton County's public water system. Therefore, a VDH WWOP is not necessary.

Water Supply Plan Review:
PRTI VA-1, LLC is not included in the Roanoke Valley-Alleghany Regional Commission Regional Water Supply Plan (WSP) (2011). Water Supply Plan demand projections for the facility were not included in the Plan, and could not be considered in the evaluation of the permit request. The Water Supply Plan states that existing sources for Franklin County, where the facility is located, were not projected to meet demands through the planning period. A projected deficit of 1.60 MGD by the year 2060 is referenced in Section 8.2.3 of the WSP.

Department Recommended Withdrawal Limits:
Based on the water demand and projections described above the Department recommends the following withdrawal volumes based upon evaluation of the groundwater withdrawal permit application.

Period of Withdrawal	Total Volume (gal.)	Volume in gal/day
Maximum Monthly:	1,100,000	35,484
Maximum Annual:	8,700,000	23,836

Technical Evaluation:
Aquaveo, LLC performed a technical evaluation of the application for the Department based on the VAHydro Groundwater Eastern Virginia Model (VAHydro-GW-VCPM). The objectives of this evaluation were to determine the areas of any aquifers that will experience at least one foot of water level decline due to the proposed withdrawal (the Area of Impact or AOI), to determine the potential for the proposed withdrawal to cause salt-water intrusion, and to determine if the proposed withdrawal meets the 80% drawdown criteria. Aquaveo, LLC also evaluated water levels in the Eastern Virginia Model compared to measured field values.

The Department concluded that the proposed withdrawal satisfies the technical evaluation criteria for permit issuance. A summary of the results of the evaluation and the AOI for the Potomac aquifers is provided in the Technical Evaluation (Attachment 1).

Part I
Operating Conditions

Authorized Withdrawals:

Owner Well Name	DEQ Well #	Aquifer	Type	Pump Intake Limit (ft. bls)
Well #1	187-00276	Potomac	Production	260
Well #2	187-00277	Potomac	Production	250

Apportionment:
Since the two production wells are located approximately 50 feet apart, both in the Potomac aquifer with similar screen intervals, and will be used nearly equally, apportionment is not required.

Additional Wells

Observation Wells: No observation wells.

Abandoned Wells: No abandoned wells.

Out of Service Wells: No out of service wells.

Pump Intake Settings:
DEQ staff geologist has reviewed available information and made the following determinations regarding the location of the aquifer tops for the following wells. Information reviewed in this process included driller's logs, geophysical logs, GW-2 form and The Virginia Coastal Plain Hydrogeologic Framework (USGS Professional Paper 1731).

Unit	Well #1 187-00276 (ft/bls)	Well #2 187-00277 (ft/bls)
Columbia (Surficial) bottom		15
Yorktown-Eastover top		25
Yorktown-Eastover bottom		70
Aquia top		70
Aquia bottom		101
Virginia Beach top		101
Virginia Beach bottom		150
Potomac top	260	250
Potomac bottom		Not Encountered

The current pump settings for Well #1 (DEQ #187-00276) and Well #2 (DEQ Well #187-00277) are unknown. Special Conditions Part II.A of the permit contains a requirement to set pump intakes for Well #1 (DEQ #187-00276) and Well #2 (DEQ #187-00277) in accordance with 9VAC25-610-140 A 6.

Withdrawal Reporting:
Groundwater withdrawals are to be recorded monthly and reported quarterly.

Water Conservation and Management Plan:
A Water Conservation and Management Plan (WCMP) meeting the requirements of 9VAC25-610-100 B was submitted and reviewed as part of the application process. The accepted Plan is to be followed by the permittee as an operational Plan for the facility/water system, is incorporated by reference into this permit, and shall have the same effect as any condition contained in this permit and may be enforced as such (Attachment 2). In addition, the Permit includes conditions requiring the following:

- Documentation that the leak detection and repair program defined in the WCMP has been initiated is due by the end of the first year of the permit term *(date)*.
- A result of an audit of the total amount of groundwater used in the distribution system and operational processes is due by the end of the second year of the permit term *(date)*.
- A report on the plan's effectiveness in reducing water use, including revisions to those elements of the WCMP that can be improved and addition of other elements found to be effective based on operations to date shall be submitted by the end of years five (*date*) and ten (*date*) of the permit term.

Mitigation Plan:
The predicted AOI resulting from the Technical Evaluation could not be defined in the source aquifer [Potomac aquifer] because the maximum drawdown estimated from the simulation was less than one foot at the wellbore. A Mitigation Plan was therefore not required for the permit.

Well Tags:
Well tags will be transmitted by the Department after issuance of the final permit.

Part II
Special Conditions

Pump Intake Determination:
The current pump settings for Well #1 (DEQ #187-00276) and Well #2 (DEQ Well #187-00277) are unknown. Prior to use of the on-site wells the pump intake for Well #1 (DEQ #187-00276) shall be set no lower than 260 feet below land surface (ft bls) and the pump intake for Well #2 (DEQ #187-00277) shall be set no lower than 250 ft bls in accordance with 9VAC25-610-140 A 6. The Department shall be notified of the pump settings within 30-days of final setting of the pumps.

Part III
General Conditions

General Conditions are applied to all Groundwater Withdrawal Permits, as stated in the Groundwater Withdrawal Regulations, 9VAC25-610.

Public Comment

The following sections will be completed after close of the public comment period.

Relevant Regulatory Agency Comments:

Summary of VDH Comments and Actions: This facility is not a public water supply so soliciting comments from VDH was not required.

Public Involvement during Application Process:

Local and Area wide Planning Requirements: The Southampton County Administrator certified on December 15, 2022, that the facility's operations are consistent with all ordinances. The Department received this certification on December 21, 2022.

Public Comment/Meetings: The public notice was published in The Tidewater News on XXX. The public comment period ran from xxxxx to xxxxx

Changes in Permit Part II Due to Public Comments

Changes in Permit Part III Due to Public Comments

Attachments

1. **Technical Evaluation**
2. **Water Conservation and Management Plan**
3. **Public Comment Sheet *(if warranted)***

COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

TECHNICAL EVALUATION FOR PROPOSED GROUNDWATER WITHDRAWAL

Date: March 17, 2023

Application /Permit Number: GW0080600

Owner / Applicant Name: PRTI, Inc.

Facility / System Name: PRTI VA-1, LLC

Facility Type: Industrial Facility

Facility / System Location: Enviva Way, Southampton County, Virginia 23851

The Commonwealth of Virginia's Groundwater Withdrawal Regulations (9VAC25-610) provide that, for a permit to be issued for a new withdrawal, to expand an existing withdrawal, or reapply for a current withdrawal, a technical evaluation shall be conducted. This report documents the results of the technical evaluation conducted to meet the requirements for the issuance of a permit to withdraw groundwater within a Designated Groundwater Management Area (9VAC25-600).

This evaluation determines the:

(1) The Area of Impact (AOI): The AOI for an aquifer is the areal extent of each aquifer where one foot or more of drawdown is predicted to occur as a result of the proposed withdrawal.

(2) Water Quality: The potential for the proposed withdrawal to cause salt water intrusion into any portion of any aquifers or the movement of waters of lower quality into areas where such movement would result in adverse impacts on existing groundwater users or the groundwater resource.

(3) The Eighty Percent Drawdown (80% Drawdown): The proposed withdrawal in combination with all existing lawful withdrawals will not lower water levels, in any confined aquifer that the withdrawal impacts, below a point that represents 80% of the distance between the land surface and the top of the aquifer at the points where the one-foot drawdown contour is predicted for the proposed withdrawal.

Requested withdrawal amount:

Requested Withdrawal Amount		
Annual Value	8,700,000	(23,836 average gpd)
Monthly Value	1,100,000	(35,484 average gpd)

Requested Apportionment of Withdrawal:

DEQ Well #	**Owner Well #**	**Aquifer**	**Percent of Withdrawal**
187-00276	Well #1	Potomac	50%
187-00277	Well #2	Potomac	50%

Summary of Requested Withdrawal:
The PRTI VA-1, LLC facility will be new construction on a 20.12-acre vacant lot of a waste tire recycling facility. The patented process will recycle waste tires by transforming them into sources of energy for electricity generation and steel. Groundwater will be used for steam generation, equipment maintenance and washing, and other processes associated with the recycling of the waste tires.

Production Wells:

Identification	Location	Construction	Pump Intake	Source Aquifer
Owner Well Name: Well #1 DEQ Well Number: 187-00276 MPID: Unknown	Lat: : 36° 39' 13.1361" N Lon: 76° 58' 30.5470" W Datum: NAD83 Elevation: 27 ft. amsl	Completion Date: October 7, 2022 Screens (ft/bls): 355-405 Total Depth (ft/bls): 405	Unknown	Potomac
Owner Well Name: Well #2 DEQ Well Number: 187-00277 MPID: Unknown	Lat: : 36° 39' 12.62474" N Lon: 76° 58' 30.18436" W Datum: NAD83 Elevation: 27 ft. amsl	Completion Date: September 26, 2022 Screens (ft/bls): 360-410 Total Depth (ft/bls): 410	Unknown	Potomac

Geologic Setting:
The PRTI VA-1, LLC wells (applicant wells) are located in Southampton County. The applicant's production wells are screened in the Potomac aquifer. USGS Professional Paper 1731[1], *The Virginia Coastal Plain Hydrogeologic Framework* (VCPHF), is the most recent study discussing the aquifers and confining units of the Virginia Coastal Plain. The study utilized numerous boreholes throughout the Virginia Coastal Plain to interpolate the elevations of the different hydrogeologic units found in the Coastal Plain.

According to the study, the Potomac aquifer is the "largest, deepest, and most heavily used source of ground water in the Virginia Coastal Plain." The aquifer is underlain across its entire extent with basement bedrock. The aquifer is found below the Potomac confining zone. The aquifer is primarily composed "of fluvial-deltaic coarse-grained quartz and feldspar sands and gravels and interbedded clays." The nearest east-west geologic cross section, ID-ID', from the USGS Professional Paper 1731 is shown in the figure at the end of this report.

Hydrologic Framework:
Data from the VCPHF is reported in this technical report to illustrate the hydrogeologic characteristics of the aquifers in the Virginia Coastal Plain near the applicant well and identify major discrepancies between regional hydrogeology and site logs interpreted by DEQ staff. The Virginia Coastal Plain Model[2] (VCPM) framework was constructed by extracting the hydrogeologic unit tops and thicknesses from the VCPHF. The original USGS VCPM was updated and adapted for use in the VA-DEQ well permitting process and is referred to as VAHydroGW-VCPM.

[1] McFarland E. R., and Bruce T.S., 2006. The Virginia Coastal Plain Hydrologic Framework: U.S. Geologic Survey Professional Paper 1731. 118 p., 25 pls. (available online at http://pubs.water.usgs.gov/pp1731/).
[2] Heywood, C.E., and Pope, J.P., 2009, Simulation of groundwater flow in the Coastal Plain aquifer system of Virginia:

VAHydroGW-VCPM Model:
The following table lists the locations of the applicant production wells within the VAHydroGW-VCPM Model.

VAHydroGW-VCPM Model Grid				
Well	**Well Number**	**MPID**	**Row**	**Column**
Well #1	187-00276	18700276	121	31
Well #2	187-00277	18700277	121	31

The following aquifer top elevations and thicknesses are simulated in the VAHydroGW-VCPM Model at the model cell containing the applicant wells.

VAHydroGW-VCPM Model Hydrogeologic Unit Information		
Aquifer	**Elevation (ft-msl)**	**Depth (ft-bls)**
Surface	28	0
Water Table aquifer (bottom)	3	25
Yorktown-Eastover (top)	-13	41
Yorktown-Eastover (bottom)	-36	64
Piney Point (top)	-44	72
Piney Point (bottom)	-52	80
Aquia (top)	-66	94
Aquia (bottom)	-95	123
Virginia Beach (top)	-107	135
Virginia Beach (bottom)	-113	141
Potomac (top)	-204	232
Potomac (bottom)	-787	815

Note: ft-msl = feet above mean sea level

Groundwater Characterization Program Recommendations:
DEQ staff has reviewed available information and made the following determinations regarding the location of the aquifer tops for the following wells. Information reviewed in this process included driller's logs, geophysical logs, GW-2 form and The Virginia Coastal Plain Hydrogeologic Framework (USGS Professional Paper 1731).

Unit	Well #1 187-00276 (ft/bls)	Well #2 187-00277 (ft/bls)
Columbia (Surficial) bottom		15
Yorktown-Eastover top		25
Yorktown-Eastover bottom		70
Aquia top		70
Aquia bottom		101
Virginia Beach top		101
Virginia Beach bottom		150
Potomac top	260	250
Potomac bottom		Not Encountered

U.S. Geological Survey Scientific Investigations Report 2009–5039, 115 p.

Comparison of the Hydrogeologic Framework and Geologist Report:
The VCPMF identifies the top and thickness of the Potomac aquifer at an elevation of 232 ft-bls and 583 feet thick at the cell containing the applicant wells. The average top elevation of the Potomac aquifer given by DEQ staff is 255 ft-bls. The average top elevation of the Potomac aquifer identified by DEQ staff is approximately 23 feet lower than, but in general agreement with the VCPMF. The thickness of the Potomac aquifer was not identified by DEQ staff so a comparison with the VCPMF could not be made.

Pump Intake Elevation:
Virginia regulations specify that well pump intakes must be placed at or above the top of the source aquifer. Since the pump intake elevations for the production wells were not provided by DEQ an assessment of the compliance to the regulation could not be made.

Water Level Comparison:
The *Virginia Coastal Plain Model (VAHydroGW-VCPM) 2021-2022 Annual Simulation of Potentiometric Groundwater Surface Elevations of Reported and Total Permitted Use* report (the *2021-2022 report)* and modeling files[3] provide two sets of simulated potentiometric water surface elevations. These water elevations are based upon, 1) the reported withdrawal amount of wells in the VAHydroGW-VCPM model ("the reported use simulation") and, 2) the total permitted withdrawal amount for wells in the VAHydroGW-VCPM model ("the total permitted simulation"). USGS regional observation network well water levels were compared to the water levels in the 2021-2022 report in order to evaluate the performance of the regional model in the vicinity of the applicant wells and assess historical groundwater trends. In the tables below, simulated water levels from the year 2021, from the reported use simulation, were compared to USGS measured water levels for the same year. For comparison, the total permitted simulated water levels are also reported. The total permitted water levels are taken from the end of the 50 year total permitted simulation and represent simulated water levels, 50 years from present, if all GWMA wells were to pump at their total permitted amount.

The USGS regional observation network wells closest to the applicant wells is shown in Figure 1 and listed in the following table. The depth of these wells correspond with the Potomac aquifer. The distances from the applicant wells to the USGS wells are also given in the table. The 2021 annual average water levels observed in the regional observation network wells are given in the following table. The VAHydroGW-VCPM row and column containing the USGS wells are also given. The water levels obtained from the regional observation network wells are shown in Figures 2 and 3**.** These figures also show the water levels from the reported use VAHydroGW-VCPM simulation for the cells containing the USGS wells.

The water level graph for the first well in the Potomac aquifer (55B 66 SOW 145C) shows a steady decline in water levels from the time of the earliest available records (1984) to about 1996. From 1996 to about 2010 there is a gap in the water level data. From 2010 to 2012, there is a drastic, approximately 80 foot increase in the water levels. Around 2012, the water level decreased almost 20 feet in a year or so, then around 2013 or 2014 the water level stabilized and has remained relatively stable to the present. The VAHydroGW-VCPM simulated reported use water levels at this location are approximately 5-10 feet lower than, but in general agreement with the USGS observed water levels during periods of time where USGS data is available.

[3] Refer to "Virginia Coastal Plain Model (VAHydroGW-VCPM) 2021-2022 Annual Simulation of Potentiometric Groundwater Surface Elevations of Reported and Total Permitted Use" at http://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuantity/GroundwaterCharacterization/ReportsPublications.aspx

The water level graph for the second well in the Potomac aquifer (52A 1) shows a steady decline in water levels from the time of the earliest available records (1970) to about 2010. From 2010 to 2012 the water levels at this well shows a sharp increase of approximately 15 feet. From 2012 to the present the water levels have remained relatively stable. The VAHydroGW-VCPM simulated reported use water levels at this location are approximately 5-10 feet higher than, but in general agreement with the USGS observed water levels.

Potomac Aquifer		
Measurement	**Well 55B 66 SOW 145C**	**Well 52A 1**
Distance from nearest applicant well (miles)	2.5	16.5
Elevation (ft-msl)	34	43.4
VAHydroGW-VCPM Row	120	127
VAHydroGW-VCPM Column	33	15
VAHydroGW-VCPM Cell Elevation	26	39
USGS Regional Well 2021 Average Water Level (ft-bls)	128.3	40.6
USGS Regional Well 2021 Average Water Level (ft-msl)	-94.3	2.8
VAHydroGW-VCPM 2021 Reported Use Simulated Water Level (ft-bls)	130	25.8
VAHydroGW-VCPM 2021 Reported Use Simulated Water Level (ft-msl)	-104	13.2
VAHydroGW-VCPM Total Permitted Simulated Water Level (ft-bls)	161.3	36.6
VAHydroGW-VCPM Total Permitted Simulated Water Level (ft-msl)	-135.3	2.4

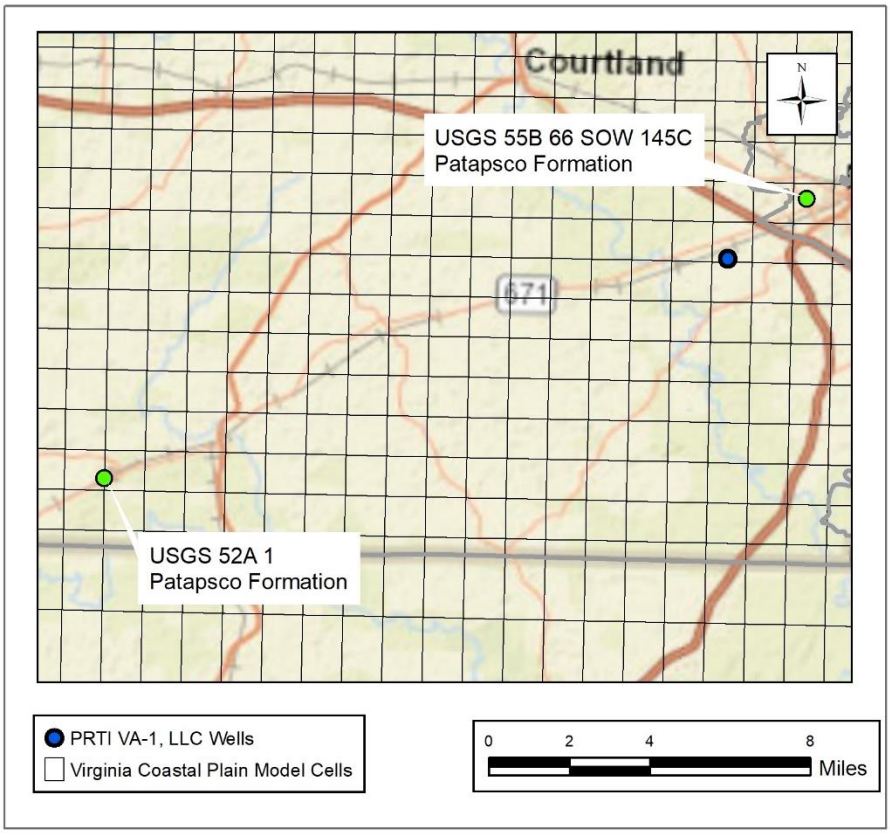


Figure 1. Nearest USGS regional observation network wells.

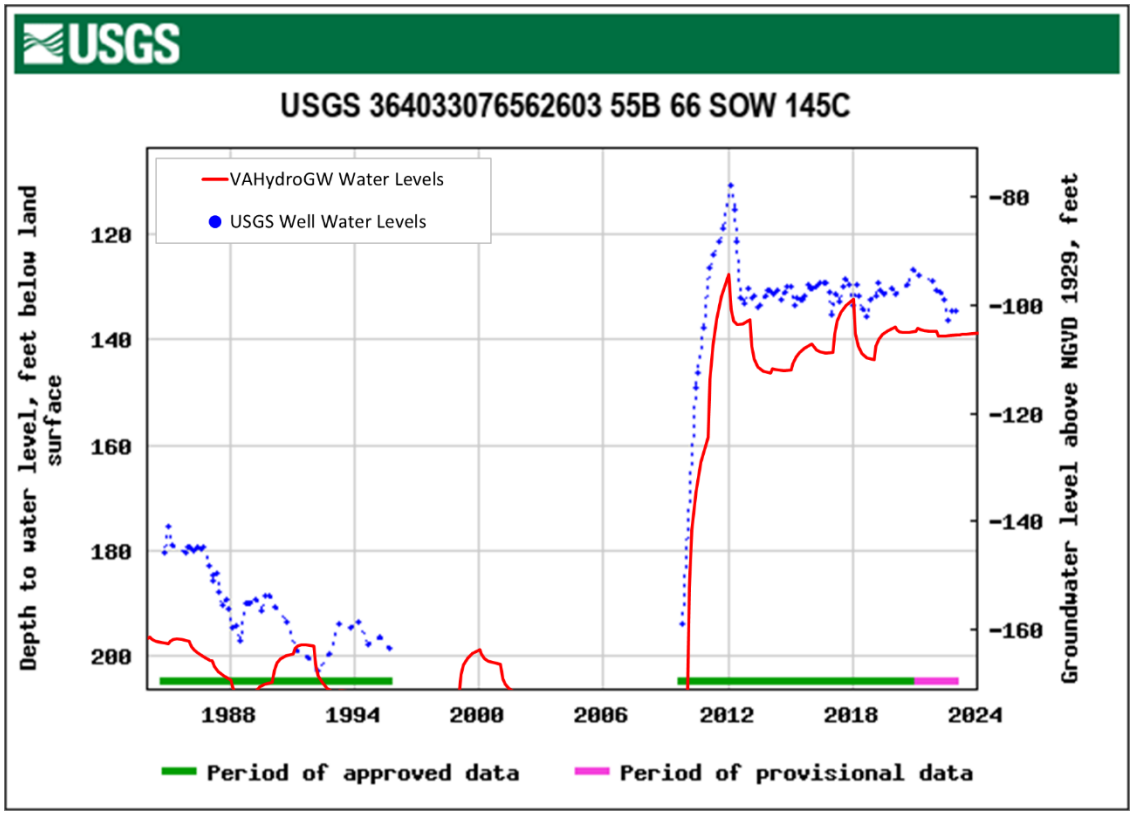


Figure 2. USGS Regional Observation Well 55B 66 SOW 145C, Potomac aquifer water levels (Patapsco Formation) recorded from 1984 to present (well depth 360 ft bls, land surface 34 ft msl) and VAHydroGW-VCPM reported use water levels.

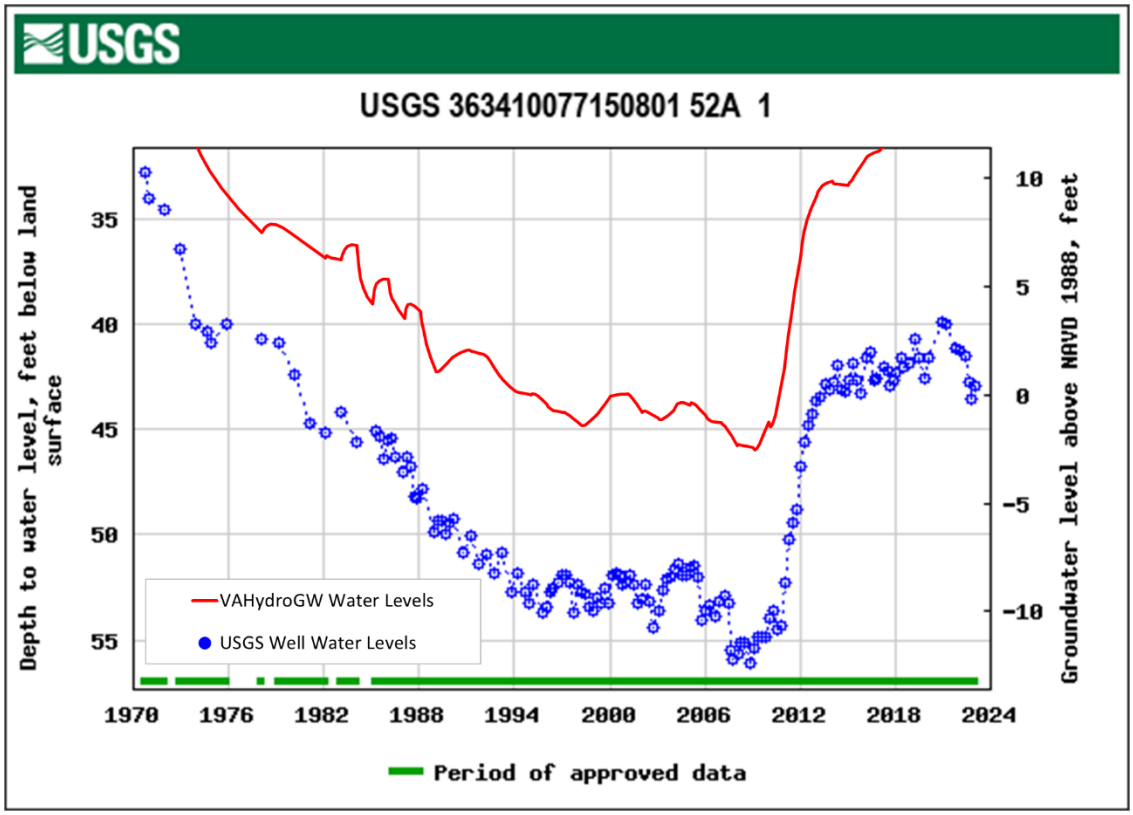


Figure 3. USGS Regional Observation Well 52A 1, Potomac aquifer water levels (Patapsco Formation) recorded from 1970 to present (well depth 217 ft bls, land surface 43.4 ft msl) and VAHydroGW-VCPM reported use water levels.

Aquifer Test(s):
An aquifer test was conducted at the facility in November/December 2022. A report of this aquifer test dated January 20, 2023 was created by Stantec Consulting Services, Inc and is available upon request from the DEQ.

The hydraulic properties for the VAHydroGW-VCPM cell containing the applicant wells are shown in the following table.

Hydrogeologic Unit	Horizontal Conductivity (ft/day)	Transmissivity (ft^2/day)	Storage Coefficient	Specific Storage (1/ft)
Surficial (Columbia) aquifer	2	50	-	0.000032
Yorktown-Eastover aquifer	22.4	514.6	0.00074	0.000032
Piney Point aquifer	18.8	150	0.00026	0.000032
Aquia aquifer	109	3,161	0.00093	0.000032
Virginia Beach aquifer	9	54	0.00019	0.000032
Potomac aquifer	29.9	17,433.5	0.00108	0.000002

Model Results

Evaluation of Withdrawal Impacts:
The magnitude of the proposed withdrawal does not allow for assessment of the area of impact using VAHydroGW-VCPM. The aquifer parameters from the 2023 Aquifer Test Report: PRTI VA-1 by Stantec were used to perform a two-dimensional analytical simulation to simulate drawdown due to the requested withdrawal for this technical evaluation. The drawdown in the Potomac aquifer resulting from the proposed withdrawal was calculated using Theis (1935) 2-D analytical simulations. The Theis simulation predicts the drawdown in a confined aquifer assuming constant discharge from a fully penetrating well. The following parameters were used for the 2-D analytical simulation:

Model Input Parameters (source: Average Potomac aquifer parameters per 2023 Aquifer Test Report: PRTI VA-1 by Stantec):
Potomac Transmissivity = 5,744 ft^2/day
Potomac Storage Coefficient = 3.04×10^{-3}

Withdrawal rate/Simulation Time = 50 years at 8,700,000 gallons per year (23,836 gallons per day).

Area of Impact:
The AOI for an aquifer is the areal extent of each aquifer where one foot or more of drawdown is predicted to occur as a result of the proposed withdrawal. The results from the Theis analytical simulation, with the parameters listed above, do not simulate an AOI in the Potomac aquifer because the simulated drawdown at the production wells is less than one foot.

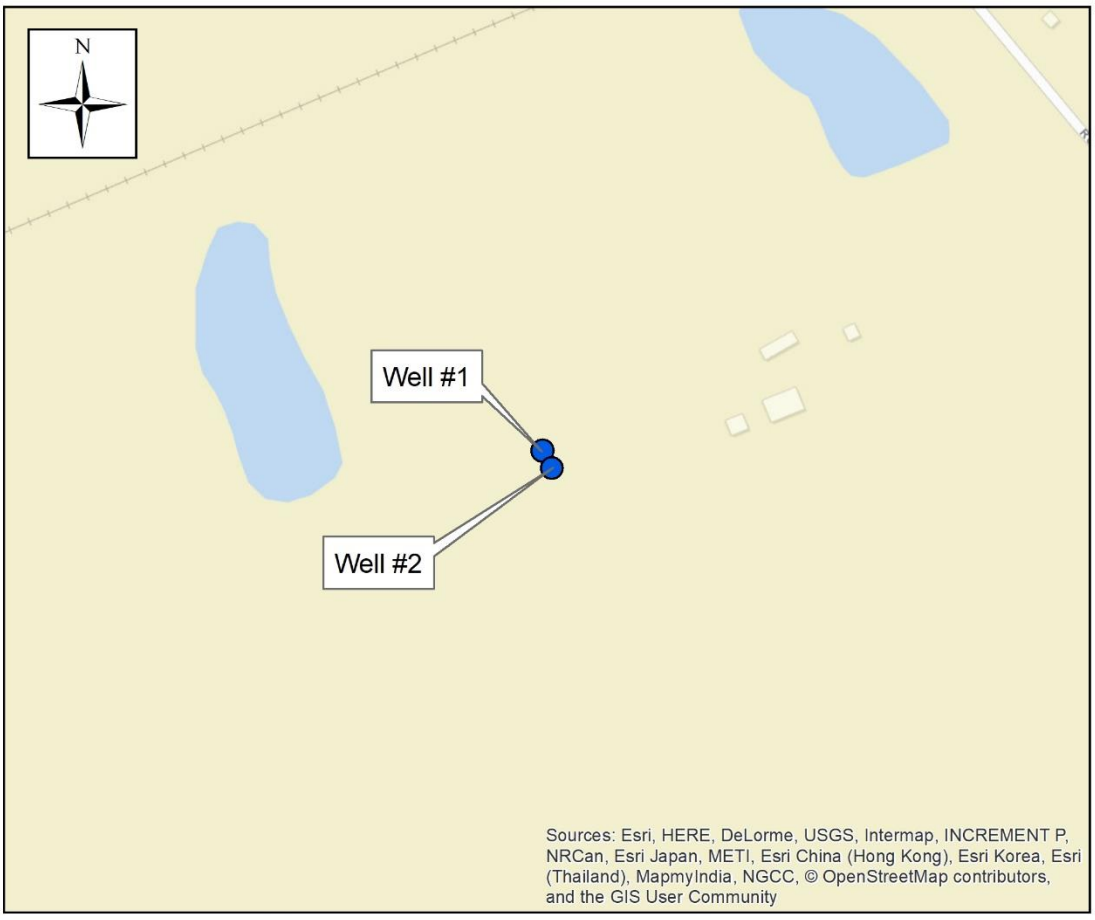
Water Quality:
The regional model (VAHydroGW-VCPM) does not indicate any changes to regional flow patterns that would lead to reduced water quality.

80 % Drawdown:
With no area of impact, this withdrawal is within the limits set by the 80% drawdown criterion.

The requested withdrawal is allocated 100% to the Potomac aquifer. The technical evaluation analysis indicated that the apportionment of the requested withdrawal amount among the applicant production wells had no significant effect on the outcome of the technical evaluation.

Conclusion:
The withdrawal requested by PRTI, Inc. for PRTI VA-1, LLC satisfies the technical evaluation criteria for permit issuance.

PRTI VA-1, LLC
Area of Impact - Potomac Aquifer



PRTI VA-1, LLC Wells

Potomac AOI

Potomac Aquifer Critical Cells

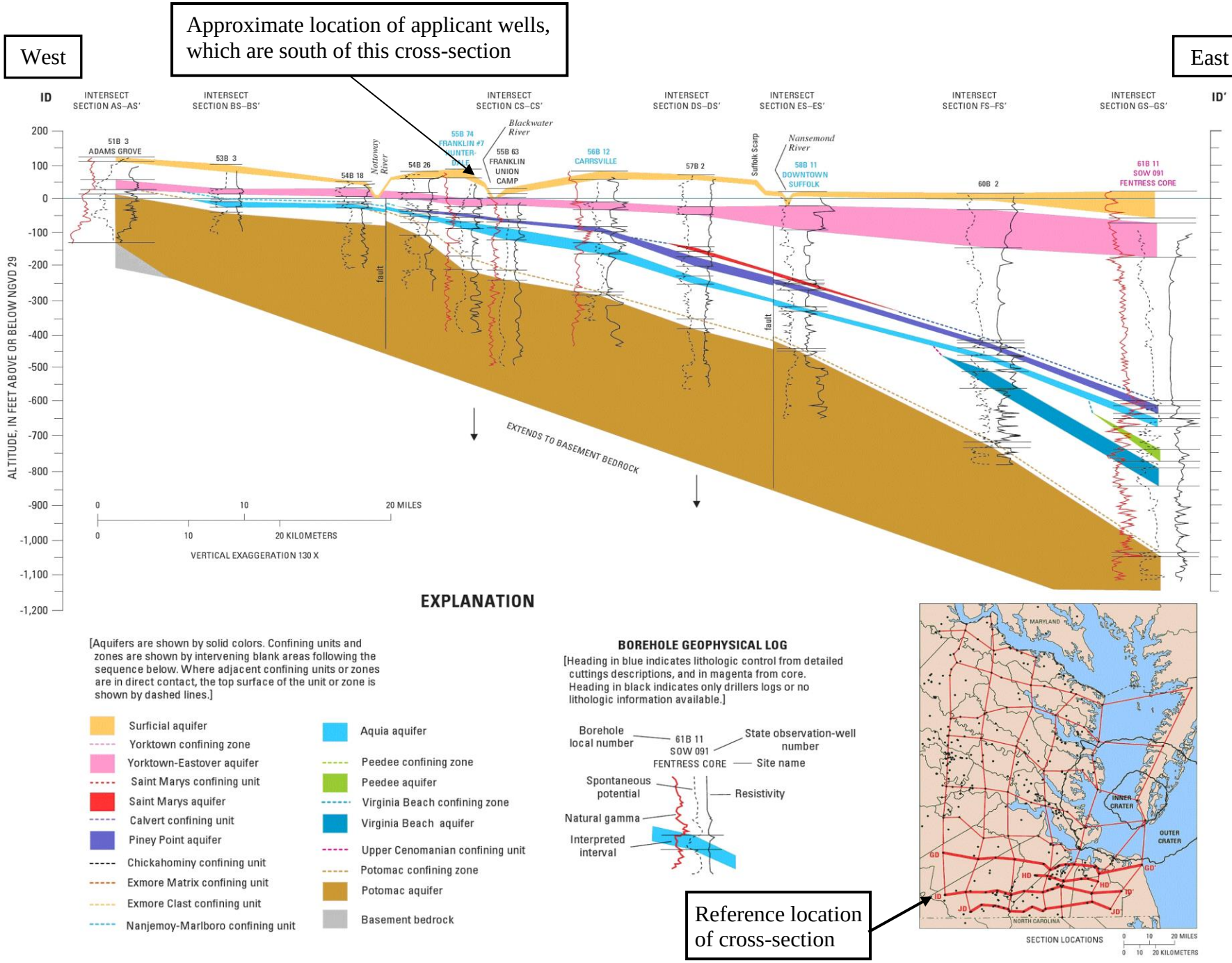
Simulated drawdown at or exceeding one foot in the Potomac aquifer resulting from a withdrawal of 8,700,000 gallons per year for 50 years from the Potomac aquifer using a two-dimensional Theis (1935) simulation.

Simulated drawdown is less than one foot.

0 250 500 1,000 Feet

Technical Evaluation performed by Aquaveo, LLC for the Virginia DEQ, Office of Water Supply Planning
March 28, 2023

DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY



Coastal Plain (2006) Cross-Section ID-ID' from USGS Professional Paper 1731.

WATER CONSERVATION AND MANAGEMENT PLAN

PRTI, INC.
SOUTHAMPTON COUNTY, VIRGINIA
GROUNDWATER WITHDRAWAL PERMIT #GW0080600

DECEMBER 2022

Prepared for:
PRTI, Inc.
2105 US 1 HWY
Franklinton, NC 27525

Prepared by:
Cardno now Stantec
10988 Richardson Road
Ashland, Virginia 23005
www.cardno.com

Table of Contents

Attachment

1 Introduction

On behalf of PRTI, Inc. (PRTI), Cardno now Stantec has prepared this Water Conservation and Management Plan (WCMP) for the new PRTI VA-1, LLC facility (the facility) in Southampton County, Virginia. Virginia's Groundwater Management Act of 1992 (Title 62.1, Chapter 25) and corresponding Groundwater Withdrawal Regulations (9VAC 25-610) require a Groundwater Withdrawal Permit (GWP) for any entity located within either the Eastern Virginia or Eastern Shore Groundwater Management Area (GWMA) that withdraws 300,000 gallons of groundwater or more in any single month. This WCMP has been prepared in conjunction with the renewal GWP application for the facility.

In 2011, the Hampton Roads Planning District Commission (HRPDC) developed the *Hampton Roads Regional Water Supply Plan* (WSP; HRPDC, July 2011), which was updated in 2021. The WSP applies to Southampton County, includes a section on Water Demand Management and a Drought Response and Contingency Plan, both of which are components of a WCMP. Additionally, Southampton County Code of Ordinances Chapter 16 Article VII discusses requirements for water conservation during normal conditions and water supply emergencies. This WCMP is consistent with the requirements of these sections of the WSP, the WSP 2021 update, and Southampton County ordinances.

1.1 WCMP Requirements

A complete WCMP must satisfy the minimum requirements of 9VAC 25-610-100. For commercial and industrial water supplies such as the PRTI facility, the WCMP shall include the following:

a. Where applicable, the plan should require use of water-saving equipment and processes for all water users including technological, procedural, or programmatic improvements to the facilities and processes to decrease the amount of water withdrawn or to decrease water demand. The goal of these requirements is to assure the most efficient use of groundwater. Information on the water-saving alternatives examined and the water savings associated with the alternatives shall be provided. Also, where appropriate, the use of water-saving fixtures in new and renovated plumbing as provided in the Uniform Statewide Building Code (13VAC5-63) shall be identified in the plan;

b. A water loss reduction program, which defines the applicant's leak detection and repair program. The water loss reduction program shall include requirements for an audit of the total amount of groundwater used in the distribution system and operational processes during the first two years of the permit cycle. Implementation of a leak detection and repair program shall be required within one year of the date the permit is issued. The program shall include a schedule for inspection of equipment and piping for leaks;

c. A water use education program that contains requirements for the education of water users and training of employees controlling water consuming processes to assure that water conservation principles are well known by the users of the resource. The program shall include a schedule for information distribution and the type of materials used;

d. An evaluation of water reuse options and assurances that water shall be reused in all instances where reuse is practicable. Potential for expansion of the existing reuse practices or adoption of additional reuse practices shall also be included; and

e. Requirements for complying with mandatory water use reductions during water shortage emergencies declared by the local governing body or water authority in accordance with §§ 15.2-923 and 15.2-924 of the Code of Virginia. This shall include, where appropriate, ordinances prohibiting the waste of water generally and requirements providing for mandatory water use restrictions in accordance with drought response and contingency ordinances implemented to comply with 9VAC25-780-120 during water shortage emergencies. The water conservation and management plan shall also contain requirements for mandatory water use restrictions during water shortage emergencies that restricts or prohibits all nonessential uses such as lawn watering, car washing, and similar nonessential industrial and commercial uses for the duration of the water shortage emergency.

The above enumerated requirements are addressed in each subsequent section of this WCMP.

2 Overview of Water System

2.1 Description of Water Use

PRTI's Thermal DeManufacturing® process recycles waste tires by transforming them into sources of energy and steel. Recycled steel will be sold as scrap metal, and energy will be utilized onsite. A portion of the generated electricity will be used to power the Thermal DeManufacturing® processes, and the remainder will be used for high-power computing at an onsite datacenter. The facility will have the capacity to produce approximately eight (8) megawatts (MW) of power from waste tires.

Water will be required by the facility for steam generation, equipment maintenance and washing, and other processes associated with Thermal DeManufacturing®. Water for employee consumption and hygiene will be provided by Southampton County's public water system.

2.2 System Design and Operation

The facility will utilize two (2) production wells: Well #1 (DEQ #187-276) and Well #2 (DEQ #187-277). Both wells are constructed in the Potomac aquifer and are located approximately 50 feet apart on the site. Well #1 is screened from 355 to 405 feet below land surface (bls), and Well #2 is screened from 360 to 410 feet bls. PRTI intends to utilize Well #1 and Well #2 nearly equally (50%-50%). Water will be pumped from the wells to atmospheric storage tanks, from which water will be pumped across the facility for use. Filtration or other treatment may be added as necessary, depending on water quality of the Potomac aquifer and the requirements of the facility's process water.

Water reuse is an integral part of PRTI's process, as further described in Sections 3 and 6 below. Water is recycled through condensation of steam at the power generation stage. Water recycled during Thermal Demanufacturing® and cleaning stages is routed to a fluids processing system. Filtered water is then returned to the facility's atmospheric storage.

Water that cannot be recycled is discharged to Southampton County's public sewer system.

2.3 Water Usage by Type

All groundwater supplied by PRTI's well field will be used for industrial processes. All potable water for employee sanitation and consumption will be supplied by Southampton County. The facility's water use can be broadly split into three (3) categories: cleaning/maintenance, electricity generation, and Thermal Demanufacturing®. Electricity generation is the most water-intensive use, followed by Thermal Demanufacturing®, and cleaning. Estimates of the relative water demands of each category are shown below:

WATER USE	PERCENT OF TOTAL WATER REQUIREMENT	PERCENT OF WATER RECYCLED
CLEANING	2%	77%
ELECTRICITY GENERATION	91%	80%
DEMANUFACTURING	7%	55%

Water consumption is different from the total water requirement as a percentage of the total due to differences in the amount of water able to be recycled from each water use.

2.4 Water Usage Schedule

The facility will be staffed 24 hours per day, 365 days per year. The facility will operate on 12-hour shifts, with relatively consistent water demands for each shift on average. Although water demand is expected to be generally consistent month to month and year to year, there are many unpredictable variables that can affect water requirements of the facility, such as:

- Market factors including feedstock (waste tire) supply,
- Workforce/employment difficulties, and
- Scheduled and unscheduled equipment maintenance.

3 Water-Saving Equipment and Processes

3.1 Water-Saving Equipment

All new construction, maintenance, and renovations must adhere to the Virginia Uniform Statewide Building Code (USBC). The USBC promotes efficient water use by specifying limits on flow rates for plumbing fixtures in new or renovated structures. Fixtures with the U.S. Environmental Protection Agency (EPA) WaterSense label are to be prioritized when practicable. Manufacturers design and produce innovative water-saving products that earn the WaterSense label by meeting or exceeding EPA criteria for efficiency and performance in specific product categories.

All washdown hoses are to be fitted with high-pressure / low-flow nozzles with triggers. Triggers reduce water waste by preventing the hoses from being left on when not actively being used. PRTI engineers will precisely specify the amount of water to be used in the facility's boilers and throughout the Thermal Demanufacturing® process in accordance with PRTI calculations and equipment manufacturer specifications to ensure optimum efficiency. The most intensive water-consuming practice will be boiler blowdown. Blowdown will only occur when necessary based on manufacturer recommendations and site-specific water chemistry.

As discussed in Section 6 below, PRTI will maintain a fluids processing system which consists of filtration and oil-water separation. Approximately 78% of the facility's total water requirement is expected to be recycled through this system.

3.2 Water Use Monitoring

PRTI will closely track water use at the facility. Well meters and numerous internal submeters will be connected to a SCADA system for continuous data collection on water use. Abnormally high water usage will trigger an alarm through the SCADA system. Automatically generated water use reports will be regularly reviewed by management. PRTI will use this data to rapidly identify leaks or other water losses. Wastewater will be discharged to Southampton County, which charges for each 1,000 gallons and thereby incentivizing PRTI to limit water use.

4 Water Loss Reduction Program

Water loss reduction includes identifying and repairing system leaks, maintaining water use monitoring programs, and maintaining a preventive maintenance program.

4.1 System Metering

The only viable means of effectively monitoring water use is through the installation of water meters. Strategically placed water meters can differentiate areas of high use from areas of moderate or low use. Water metering and an effective reading system enables staff to pinpoint areas of high water loss. In addition to meters on each production well, the facility meters water use internally in multiple locations including various wash locations, Thermal Demanufacturing® towers, boilers, and the fluids processing system. All water meters will be read daily.

4.2 Unaccounted-for Water Analysis

The purpose of an unaccounted-for water analysis is to identify points in the facility where unexpected water losses are occurring. Water production (at the wells) and water use (submeters within facility) will be monitored and reviewed regularly. Staff will be trained to look for abnormally high water usage that could indicate a leak or

other water loss in the system. The facility management team will review water use reports and request leak detection and/or repair actions as necessary.

Wastewater discharged to the Southampton County sewer system will also be metered. Although the wastewater volume will differ from the water production volume due to water consumed and recycled in facility processes, significant increases in water delivered to the sewer can be used to identify potential water losses. PRTI will review wastewater volumes each billing cycle.

4.3 Water System Leak Detection and Repair

Where possible, water system plumbing will be above ground for ease of maintenance and leak detection. Therefore, most leaks can be detected and repaired rapidly. Leaks that are not readily visible may be detected through the unaccounted-for water analysis described above. Reduced water pressure at the facility may be noticeable at washdown hoses and could be indicative of a leak. Regardless of whether a leak is expected, management and/or maintenance staff will perform facility walkthroughs at least weekly to identify potential equipment and infrastructure problems, including leaks.

Staff will inform management immediately upon noticing evidence of leaks (e.g., puddles, high water meter reading) who will initiate the appropriate repair process. Depending on the specifics of a leak, PRTI may make repairs internally. For larger or more complex repairs, PRTI will maintain a list of approved local contractors specialized in water system leak detection and repairs. The targeted repair time for minor leaks (e.g., dripping hose nozzle) is within five (5) business days, and major leaks (e.g., water line break) must be repaired as soon as possible.

4.4 Preventive Maintenance

It is in PRTI's interest to perform preventative maintenance throughout the facility, including on equipment and infrastructure that use water. Lost time due to unexpected repairs leads to lost revenue. Additionally, PRTI pays Southampton County for every 1,000 gallons of wastewater generated, further incentivizing PRTI to prevent leaks. PRTI tracks the condition and age of major equipment and infrastructure. Facility equipment that is approaching end-of-life and/or is malfunctioning more than normal will be evaluated for repair or replacement prior to resulting in major water losses.

5 Water Use Education Program

Education of PRTI staff is an essential component of an effective water conservation program.

5.1 Operator and Staff Education

All facility staff will be made aware that water losses may result in facility downtime and therefore represent lost revenue, and that the facility is operating under a Groundwater Withdrawal Permit with water usage limitations. Staff will be required to review this WCMP on an annual basis and demonstrate an understanding of the WCMP's requirements. Any new staff hired before or after the annual review will be required to review this WCMP and demonstrate an understanding of its requirements.

Copies of the WCMP and staff training documentation will be maintained in PRTI's offices.

6 Water Reuse

PRTI actively searches for new water reuse opportunities at the facility. On average, approximately 78% of water is expected to be filtered and recycled onsite. In the interest of further conserving water, PRTI is, and will continue to evaluate the potential for greywater reuse and stormwater capture as well as increasing the percentage of water captured through Thermal Demanufacturing®, cleaning, and electricity generation. It is PRTI's intent to recycle these water sources; however, further studies will be necessary after the facility has been in operation. The Thermal Demanufacturing® process has specific water quality requirements which

source waters must meet or be feasibly treated to meet. Updates regarding water reuse will be provided to DEQ in Water Conservation and Management Plan (WCMP) updates and Effectiveness Reports.

7 Requirements for Mandatory Water Use Restrictions

Southampton County adopted a Water Conservation and Emergency Water Supply Ordinance in 1995 (**Attachment A**). This ordinance details the water conservation measures to be taken by the County and its residents and businesses on a regular basis, as well as those taken during water supply emergencies. This WCMP is consistent with the requirements of this ordinance, as well as the *Hampton Roads Regional Water Supply Plan* (WSP; HRPDC, July 2011 – updated 2021). PRTI will track and follow the County's water supply emergency conditions and respond appropriately. In the case of a larger-scale water supply emergency, PRTI will comply with all orders from the Commonwealth of Virginia.

It should be noted that PRTI's water use is for essential business operations. The vast majority of water used by the facility is directly associated with the processing of tires and generation of electricity. A mandatory reduction in water use would reduce the amount of tires that could be processed and thereby reduce the amount of electricity produced. There is no recreational use of water by the facility's employees or landscape irrigation.

7.1 Monitoring and Analysis

Maximization of the available water supply relies on effective monitoring to identify and respond to drought conditions and other water shortage emergencies as early as possible. It should be noted that a drought is unlikely to affect the Potomac aquifer and PRTI's water supply. This aquifer is confined from land surface and therefore receives minimal amounts of direct recharge from precipitation. However, regionally, there may be more water use from the Potomac aquifer during drought periods for additional irrigation and cooling water and when surface water is less available. The Potomac aquifer is more likely to be affected by long-term (decadal) climatic and water use trends. PRTI can independently monitor changing aquifer heads in nearby State Observation Wells (SOWs) through the interactive United States Geologic Survey (USGS) National Water Information System website.

7.2 Emergency Conditions

Southampton County's ordinance does not specify stages beyond a "drought emergency"; however, the Virginia Drought Response Plan identifies three (3) drought stages that can be declared. Although not all applicable to industrial facilities such as PRTI, DEQ's recommended actions for each stage are below for reference:

1. Drought Watch

   Intended to increase awareness in the public and private sector of climatic conditions that are likely to precede the occurrence of a significant drought event. Suggested responses:

   - Minimize nonessential water use,
   - Review existing or develop new local water conservation and drought contingency plans and take conservation actions consistent with those plans,
   - Include water conservation information on local websites and distribute water conservation information as broadly as possible,
   - Continue monitoring the condition of public waterworks and self-supplied withdrawal systems,
   - Pursue leak detection and repair programs aggressively, and water systems in partnership with the Virginia Department of Health,
   - Impose water use restrictions when consistent with local water supply conditions.

2. Drought Warning

   The onset of a significant drought event is imminent. Recommended steps to help protect current water supplies:

- Minimize nonessential water use, including the elimination of non-essential flushing of water lines
- Begin voluntary water conservation requirements contained in drought water conservation and contingency plans
- Review existing or develop new local water conservation and drought contingency plans and take conservation actions consistent with those plans.
- Include water conservation information on local websites and distribute water conservation information as broadly as possible
- Continue monitoring the condition of public waterworks and self-supplied water systems in partnership with the Virginia Department of Health.
- Impose mandatory water use restrictions if and when consistent with local water supply conditions
- Continue to aggressively pursue leak detection and repair programs

3. Drought Emergency

   Required during the height of a very severe or extreme drought event.

   - Begin mandatory water conservation requirements, and
   - Discourage or prohibit:
     - unrestricted irrigation of lawns, golf courses, and athletic fields;
     - washing of paved surfaces such as streets, roads, sidewalks, driveways, garages, parking areas, tennis courts and patios;
     - use of water for washing or cleaning mobile equipment, including autos, trucks, trailers, and boats;
     - use of water for the operation of ornamental fountains, artificial waterfalls, misting machines, and reflecting pools;
     - use of water to fill up and top off outdoor swimming pools; and
     - serving water in restaurants, clubs, or eating-places unless requested by the customer.

7.3 Use Restrictions

Use restrictions are conservation measures that are employed to produce short-term water demand reductions during water supply emergencies. As noted above, the PRTI facility's water use will be entirely essential, so the ability to restrict water use is limited. However, if any were occurring, PRTI will cease all non-essential water uses (e.g., restrict any cleaning for aesthetic purposes) as required and will continually inform and update employees on the status of any water supply emergency and make reminders of the importance of water conservation.

Following declaration of any drought stage, PRTI will:

- Monitor drought conditions through the DEQ Virginia Drought Monitoring Task Force and the Southampton County Board of Supervisors,
- Inform staff of the existence of a drought and provide reminders of the importance of water conservation and best practices, and
- Comply with relevant DEQ and Southampton County restrictions on non-essential water use in accordance with state regulations and County ordinances, including the elimination of non-essential washing of the facility, equipment, and vehicles.

If mandatory water use restrictions are declared that apply to PRTI's industrial processes, PRTI will evaluate the facility's ability to further limit water use while maintaining essential operations, such as temporary increases in water reuse.

7.4 Declaration of End of Water Emergencies

In the case of locally declared emergencies, the Southampton County Board of Supervisors will notify the public of the cessation of any water use restrictions via the County website, television, social media, special mailings, and/or by public notices in local newspaper(s) when, in their opinion, the water emergency situation no longer exists.

In the case of commonwealth-wide or regional emergencies, the emergency will end upon order of the Governor of Virginia.

8 WCMP Effectiveness Reporting

In compliance with the forthcoming renewed GWP, several WCMP effectiveness reports will be submitted to DEQ. By the end of year one of the GWP term, documentation will be submitted to DEQ showing the leak detection and repair program has been implemented at the facility. By the end of year two of the GWP term, the results of a water audit will be submitted to DEQ. By the end of years five and ten of the GWP term, the facility will develop reports on the effectiveness of this WCMP. This will include revisions to elements of the WCMP that can be improved and the addition of other elements found to be effective based on operations to-date. These reports shall include:

- Any new water-saving equipment installed or water-saving processes adopted;
- Actions taken to reduce the volume of water needed to supply the facility;
- Planned short or long-term efforts and actions to be added to the WCMP to improve the efficiency of water use and for reducing the loss of water;
- Results of additional water audits completed;
- Evaluation of the leak detection and repair program;
- Description of educational activities completed; and
- Identification of any new water reuse opportunities.

ARTICLE VII. WATER CONSERVATION AND EMERGENCY WATER SUPPLY

Sec. 16-260. Water conservation during normal conditions.

(a) *Flow rates for plumbing fixtures.* In all new construction and all remodeling and/or replacement of plumbing fixtures, only fixtures not exceeding the following rates and/or water consumption shall be permitted provided, however, that the Virginia Uniform State-wide Building Code, as in force and effect, shall control as to exceptions:

Water closet	1.6 gallons per flush
Urinal	1.0 gallon per flush
Shower head	2.5 gallons per minute at 80 psi
Lavatory non-public	2.2 gallons per minute at 60 psi
Lavatory public	0.5 gallons per minute at 80 psi
Lavatory public (self closing)	0.25 gallon per metering cycle
Sink faucet	2.2 gallons per minute at 60 psi

(b) *Car washes.* All new car wash installations shall be equipped with an approved water recycling system. All existing car wash installations shall be equipped with such recycling devices no later than one (1) year from the effective date of this article [effective May 23, 1995].

(c) *Waste of water, generally: Leak repairs.* Any owner of any residential unit, commercial or industrial establishment, who is found to be an excessive user of water due to leakage from water lines or plumbing fixtures on the premises and who fails to repair all stop such leakage after notice by the duly authorized agent of the Southampton County Board of Supervisors, shall be subject to the penalty provided under section 16-262.

No persons shall permit the water to run from any hydrant, meter, or fixture without proper care to prevent waste.

(d) *Continuous flow equipment.* In all new construction and all repair or replacement of continuous flow devises, any water connector device or appliance requiring a continuous flow of five (5) gallons per minute or more and not covered by section 16-260 shall be equipped with an approved water recycling system.

(Ord. of 5-22-95)

Sec. 16-261. Water conservation during water supply emergencies.

Should the Southampton County Board of Supervisors or the director of the department of environmental quality find that a water supply emergency exists, the Southampton County Board of Supervisors may, by public declaration, limit or prohibit the following uses of water:

(a) The use of water to water down sidewalks, walkways, driveways, parking lots, tennis courts or other hard surfaced areas, buildings or structures.

(b) The use of water to wash automobiles, trucks, trailers or any other type of mobile equipment, except in facilities operating with a water recycling system. Any facility operating with an approved recycling system must prominently display in public view a sign stating such a recycling system is in operation.

(c) The watering of shrubbery, trees, lawns, grass, plants or other vegetation, except when using recycled water, or except from a watering container not exceeding three (3) gallons in capacity.

(d) The use of water in the operation of any ornamental fountain, or for scenic and recreational ponds and lakes, except for the minimal amount required to support fish life.

(e) The use of water from fire hydrants for construction purposes, or for any purpose other than firefighting.

(f) The use of water to fill or refill swimming pools.

(g) The serving of drinking water in restaurants unless requested by the customer.

Any or all of the above restrictions shall become effective upon such restrictions being printed in any newspaper of general circulation in Southampton County, or broadcasted over any radio or television servicing Southampton County. These restrictions shall be terminated upon a finding that the water shortage is over and emergency situation no longer exists.

Should the implementation of all of the above measures fail to conserve a sufficient amount of water supply for the citizens of Southampton County, then specific allotments of water supply, by volume, to each water customer shall be imposed. If the allotted amount of water is exceeded within any billing period, each customer so exceeding its allotment shall pay a surcharge. The allotment for each customer and the surcharge rate shall be determined by the Southampton County Board of Supervisors.

(Ord. of 5-22-95)

Sec. 16-262. Penalties.

Any persons convicted of violating any of the provisions of this article shall be guilty of a class 1 misdemeanor, and upon conviction thereof may be fined not more than two thousand five hundred dollars ($2,500.00), or imprisoned in jail for not more than twelve (12) months, either or both, for each offense. Each day in which any violation shall continue shall be deemed a separate offense.

(Ord. of 5-22-95)

Sec. 16-263. Liability.

Any person violating any of the provisions of this chapter shall become liable to Southampton County for any expense, loss or damage caused the county by reason of such violation.

(Ord. of 5-22-95)